

The Builder.

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HERE is an evident anxiety amongst brickmakers to produce bricks of improved form and better character than those that have been long in use, and even

the reproaches that we addressed to them some time ago have not been without their use. At present, however, little has been done: the removal of the fiscal hindrances has not yet produced the good results we looked for: bricks of the worst character are still used, and in respect of decoration the attempts are but feeble and have not yet been taken up by the public. Still there is a stir arising: brick machines of various sorts are patented, and bricks of different construction advertised.

We scarcely anticipate that bricks will be made more cheaply by machines than by hand, but we may have them better for the same cost. Those of both sorts ought to be cheaper than they are. We have an account before us of a "patent brick" manufactory conducted by Mr. Beart, at Huntingdon, not far from Cambridge. These bricks are perforated: each has twenty-four round holes through it. Steam grinds the clay and forces it into the machine: a small metal screen prevents stones from getting into the mill. The bricks are wheeled to the drying-stoves where they are kept twenty-four hours to dry, and are then built up in a kiln at the farther end of the stoves, to be burnt in the ordinary way. These have been proved, our informant says, by Ransome and May, of Ipswich, to be "stronger than solid bricks." This, of course, does not mean that the perforations give a stronger form of brick, but they admit of better burning, and allow the moisture to escape without producing fissures. "The cost at which bricks can be produced in the factory is, for labour, including raising the clay, 4s. to 5s. per thousand, to which the price of half a ton of fuel for working steam-engine, drying-stoves, &c. is to be added."

Hart's portable brick-machine includes a truck running on a tramway, to convey the clay to the machine; a pug-mill, in which the clay is tempered; and an endless chain, conveying moveable moulds passing under the pug-mill. The operation of the machine is as follows:—The clay is dug from the field, watered down in the usual manner, and placed by the temperers in the truck, when the machine is set in motion by two horses or steam power. The truck moves along the tramway up an incline plane, and when it reaches the hopper the latch is lifted up, and the bottom of the truck opens and discharges the clay into the hopper: the clay is then ground and passed down into moveable moulds, and is carried under the mill by an endless chain to the end of the machine, where the bricks are received by two persons, who open the moulds and place them on pallet-boards on the pages: they then place the moulds on a slide, which carries them to the other end of the machine, when they are again placed by two persons on the endless chain to be again

filled. In this way, they say, 2,000 bricks may be made with ease every hour, and a greater quantity, if required.

The same power which makes the bricks grinds the clay. The machine runs upon two wheels, and may be moved with two horses at pleasure. The cost of making 20,000 per day of ten hours, at London prices, according to the patentee, is, by hand-labour, four gangs, 3l. 16s. and by machine, 1l. 9s.

In this calculation, however, he allows nothing for the cost of the machine (200l.), wear and tear, cost of steam power, &c. so that the statement is not quite fair.

From Louisville, United States, we hear of a machine, invented by an Englishman, not yet in operation, which is to manufacture bricks ready for use in thirty-six hours "at a cost of at least 50 per cent. less than the usual mode of manufacturing them."

Woodworth and Mower, of Boston, also in the United States, have a machine for making bricks from dry clay, which turns out 3,000 per hour. The clay is pulverised, and the machine worked by a steam-engine of 20-horse power. The clay is first dried, then ground between heavy rollers, then screened or sifted and passed into the machine in a uniform state, where it is subjected to the immense power of the machine, and a beautiful brick is said to be produced, almost as smooth and dense as polished marble. The bricks are taken from the machine and immediately set in the kiln ready for burning, without spreading previously on the yard to dry. The denseness and polish spoken of must interfere with the adherence of the mortar.

The machine patented by Messrs. Randell and Saunders, of Bath, has been already described in our pages. It consists of a horizontal reservoir for the clay, on a strong iron frame, in which revolve two shafts geared together by spur wheels. One of the shafts is prolonged outside the frame, on which is a spur-wheel connected with a pinion on the same shaft as a fast and loose pulley, through which the power is applied. Each of the shafts in the receiver carries a clay traversing screw, the threads of which are formed very deep and hollow, and in their revolutions not only force the clay which is continuously fed from a hopper forward, but pug it as it proceeds, until it is forced out in a continuous stream at the mouth-piece, which may be of the form of the common brick or tile, or by the introduction of a core they may be made hollow, or pipes of any form or calibre may be produced. On leaving the orifice of the mould they are received on an endless band passing over rollers, which is set in motion by the friction of the clay, and on the end roller is a cone pulley with grooves of various diameters, from which a crossed endless cord actuates a self-acting cutting apparatus, which, by shifting the cord on the cone, can be made to cut off the material in lengths from 3 inches to 3 feet.

Amongst those who are entering largely into the manufacture of bricks is Mr. Thos. Cubitt, who has opened extensive grounds on the Medway, set up steam-engines with lofty furnace-shafts, and is otherwise preparing for large operations in machine-made bricks. The arrangement he has in use at Thamesbank is that known as the Ainslie machine, with some improvements. One of these, attended by three boys, turns out 1,000 bricks per hour, a limit fixed, not by the machine,

but by the ability of the attendants to remove those made. The clay passes through two rollers out of the pug-mill, by which means the air is driven out,—a very important point to be considered in examining the operations of any brick-machine. Oil runs in behind the die, to facilitate the passage of the clay through it, and this assists in giving a smooth face and ends to the brick, while the wire which cuts each off leaves a rough top and bottom for the mortar. It is scarcely necessary to remark that all clays will not suit brick-machines. There is a nice adaptation of the Ainslie machine for making large earthen pipes, with a "collar" at the end of each, by one operation.

Mr. Moon's "hollow chimney bricks" are slowly making their way into use; but it takes a long time to obtain an extended adoption of any new arrangement. The way in which smoke flues are formed in the large majority of houses now built is most unworkmanlike and barbarous, full of evil, and in some cases, danger: the bricks, or more usually bats, are put together without the least care, and the interior is coarsely plastered over with mortar or with pargetting, which is very speedily destroyed by the apparatus used for sweeping chimneys, and then the smoke finds its way out through the open joints to the destruction of the paint, paper, furniture, and comfort of the occupant on either side, if nothing worse ensue. The flues formed by the chimney bricks are 10 inches in diameter, and the thickness between each brick 9 inches. This, in some positions, might be an objection.

The bricks for "British bond," registered by Mr. W. Austin, are made to dovetail: the headers have the form, on plan, of two wedge-shaped pieces, joined together at the narrow ends. They are a simplification merely of Hitch's "Rebated bricks." Like the latter, they admit of continuous spaces in the wall for pipes, ventilation, &c.

The coloured and glazed bricks now manufactured offer materials for adaptation; and Minton's examples of ornament in baked earth, exhibited at Marlborough House, should show architects that there is an unworked field open to them for the display of artistic talent and ingenuity.

REASONS FOR THE COMPLETION OF THE NATIONAL MONUMENT OF SCOTLAND.*

THE site, on the summit of the Acropolis, must have greatly enhanced the beauty of the Parthenon. All structures depend much on situation for effect, more especially the Grecian Doric Temple, from its unity and simplicity of composition. The Greeks generally chose elevated and commanding sites, not unfrequently rural, and far removed from the bustle of cities; in illustration of which, besides the Temples of the Acropolis, the following examples, among many others, may be enumerated: the Temple of Minerva, on the promontory of Sunium; of Jupiter, on Mount Panhellenius, in Egina; of Apollo, on Mount Corythus, amidst the forests of Arcadia; the temples on the rocky heights of Delphi and Eleusis; the Temple of Esculapius, near Liguria, situated in a grove surrounded by mountains; the Doric temple on the precipitous rocks of Segesta; the Temple of Venus, on Mount Eryx; besides those of Juno, Lucina, Concord, Hercules, and Jupiter Olympus, on the lofty ridge of Agrigentum.

* The following formed part of a paper read before the Architectural Institute of Scotland. The paper gave also a sketch of the circumstances attending the commencement of the monument, and remarks on the ancient and modern state of the Temple of Minerva, or Parthenon.